DOCUMENT RESUME

ED 199 166 SO 013 228

AUTHOR Amara, Roy
TITLE The Futures Field. Paper P-95.
INSTITUTION Institute for the Future, Menlo Park, Calif.
PUB DATE Sep 80
NOTE 40p.: For related documents, see SO 013 225-228.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Definitions: *Futures (of Society); Interdisciplinary Approach: Needs Assessment: *Objectives: *Research Needs: Social Change: Social Sciences: State of the Art Reviews

ABSTRACT

If futures studies is to progress beyond the formative stages, it must agree upon a set of premises, develop a common language, focus research efforts, and set useful objectives. To begin these processes, this paper examines basic premises, proposes criteria for judging relevance and progress in the field, and speculates on possible directions. The document is presented in three major parts. In the first part, an overview is presented of futures studies premises, objectives, tools, practitioners, and organizations. Basic premises include that the future is not predictable, alternative futures exist, and future outcomes can be influenced by individual choices. Principal objectives suggested by these premises include identifying possible choices about the future, examining particular paths in detail, and selecting and implementing particular paths. Part two identifies major criticisms of the futures field, including that it contains no clear framework or theories, overpromises results, contains inadequate tools and methodology, is not useful to decision makers, and is not effective in changing perceptions. Criteria for responding to these criticisms are suggested. In part three, possible future directions are suggested and one scenario is identified as being most likely--that the futures field will eventually be subsumed in some larger context. The conclusion is that, even when the futures field becomes integrated with other disciplines, it will leave distinctive marks on social planning. These marks will include demystification of social planning, a deeper understanding of social change processes, more effective integration of qualitative and quantitative components in planning, and a more balanced multidisciplinary approach to planning. (DB)

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THE FUTURES FIELD

Roy Amara
President

Institute for the Future
2740 Sand Hill Road
Menlo Park, California 94025

SP013 228

September 1980

Paper P-95

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THE FUTURES FIELD*

Roy Amara
Institute for the Future

September 1980

INTRODUCTION

No generally accepted definition of what comprises the futures field currently exists.** This is not a serious problem in the formative stages of any purposeful activity; in fact, it may even be of considerable advantage to allow for exploration, experimentation, and trial and error. But if the field is to progress into adolescence and adulthood, at some point a generally agreed-upon set of premises or assumptions is almost essential for developing a common language, focusing our efforts, measuring progress, and setting useful directions.

The purpose of this paper is to begin the process of defining the futures field by reexamining its basic premises, by proposing criteria for judging relevance and progress in the field, and by speculating on possible directions in which the field may move.

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*"Futures field" (or "futures") is used synonomously with and in preference to "futurism," "futurology," or "futuristics." "Futures field" is intended to be broader than, and to encompass, "futures studies" and "futures research."

**The best attempt to date is: Bertrand de Jouvenal, The Art of Conjecture, New York: Basic Books, Inc., 1967.

PART I. BASIC ELEMENTS DEFINING THE FUTURES FIELD

What I consider to be the key elements defining the field will be examined first: basic premises made by practitioners that underlie perceptions of the future; contrasting roles of futurists; basic methodologies used; characteristics of futurists; and characteristics of prototypical organizations.

Premises

Few factors are as key as the underlying assumptions we hold about the nature of the future itself and, especially important, assumptions we hold about our ability to foresee and influence that future. We seldom take time to examine or reexamine these premises, to compare them with those of others, and to understand how differing roles as well as different substantive and methodological perceptions may stem from differences in these underlying assumptions.

Of the possible set of premises that may be identified, I consider the following three as the most basic:

1. The future is not predictable. A more technical way of stating the same point is the following: We cannot generally give point estimates of quantitites describing an outcome. Perhaps this premise needs no elaboration. Yet, it is surprising how often the power to predict is ascribed--either explicitly or implicitly--as the primary purpose of the futures field. The future is intrinsically not predictable for many reasons: fragmentary data on the past and present; incomplete understanding of the processes of change; and our inability to anticipate the direction and influence of individual choices. The degree of uncertainty, of course, varies with the domain of interest. For some physical systems the uncertainty may be very low (e.g., the prediction of a solar eclipse). For complex social, political, and economic systems, the inherent uncertainties are usually very large.

2. Alternative futures exist. This premise is closely related to the first, but not identical to it. Even though the future may not be predictable--perhaps largely due to our own shortcomings in comprehending the past and present--it does not necessarily follow that alternative futures exist. The key point in this premise is that the future is not predetermined, not fixed, not inevitable.

3. Future outcomes can be influenced by individual choices. The important notion here is that of choice: namely, choice can in principle always be exercised to influence (even if only slightly) the outcomes, the impact of outcomes, or, in the broadest sense, the particular alternative future that materializes. No guarantee can be made, of course, that the exercise of choice will produce or even increase or decrease the likelihood of desirable or undesirable outcomes (otherwise premise #1 would be violated).

Roles

The basic premises define a set of objectives that underlie the role of practioners in the futures field (i.e., the futurists). The principal objectives are to help inform perceptions, alternatives, and choices about the future by:

- laying out paths of possibilities
- examining in detail particular paths
- expressing preferences for, and implementing, particular paths.

These objectives are not intended to be mutually exclusive. Many futurists pursue all three, sometimes at once, although most tend to focus on one or two. Furthermore, no constraints are placed on how such objectives are to be fulfilled. For example, possibilities can be of any kind (utopian or dystopian), can be generated by any process, and can cover any time frame of interest. Similarly, no prescriptions apply to the depth of detail of analysis or the nature of the preferences expressed.

1. Laying out paths of possibilities. This role is filled in an enormous variety of ways. We may speak of painting or creating images, alerting to dangers and opportunities, opening up choices, or sensitizing perceptions. The key notion is that of generating images of the future, and the role may therefore be described as essentially image-driven.

   The processes for generating images are not well understood. Polak* has noted that we live in a time of paucity of images. This may or may not be true. What we do know is that our knowledge of how images are generated is very obscure. We know that sometimes images lead and sometimes lag cultural development. And we know that images are often generated best

*Fred Polak, The Image of the Future, San Francisco: Josey-Bass Inc., 1973.

by individuals we identify as visionary--with the primary objective to describe the "can be," not the likelihood of a particular alternative or the preferences we may have for it. The shorthand descriptor "possible" will be used to designate this set of activities.

2. Examining in detail particular paths. This role defines the analytical arm of the futures field and may therefore be characterized as analytically-driven. Analysis need not be quantitative; in fact, it often is largely qualitative and exploratory. The domain of interest includes the characterization of uncertainties, the estimation of probabilities of occurrence (of events and trends), the identification of alternatives, and the evaluation of the consequences of choices. The primary objective is to provide a more systematic view of alternatives and to elucidate the "may be" or probabilities, either qualitatively or, if justifiable, in terms of probability distributions. The descriptor "probable" will be used to designate these roles.

3. Expressing preferences for, and implementing, particular paths. The third dimension of the futurist's role deals with the expression of preferences as precursors for guiding action. Here the emphasis shifts to educating one's preferences, involving those to be affected by the occurrence of likely developments and particular choices, winning support for preferred alternatives or choices, or helping "to make it happen." The dominant orientation is value-driven and, in contrast to the visionary and exploratory objectives noted previously, the objective here is to be normative or prescriptive. Instead of "can be" and "may be," the focus is on "should (or ought to) be." The descriptor "preferable" will be used as a shorthand for this group of activities.

Table 1 summarizes the contrasting roles of the futurist in accordance with the definitions developed. An important word of caution is in order: The differences in roles have been overdrawn. Few, if any, futurists behave in such a way as to limit their activities exclusively to one role. Most activities involve some component of each. Nevertheless, as we shall see, the proposed framework can be very useful in understanding how differences in roles imply differences in criteria for evaluating relevance of output and progress in the field.

Table 1

Contrasting Roles of Futurists

	Possible	Probable	Preferable
	image-driven	analytically-driven	value-driven
Roles	visionary	exploratory	normative
	can be	may be	should (ought to) be

Tools

Not much consensus exists on how to describe or categorize the tools or approaches that futurists use in their work. Some will claim that there are no useful tools. Others will set out to catalog encyclopedically dozens of so-called "techniques."* Pragmatically, the state of affairs is perhaps somewhere in between. In any case, it is valid to observe that futurists' tools are still very primitive and should be used only with a clear recognition of the limits of their applicability.

It is useful to view the dominant approaches of futurists in relationship to both premises about the future and the contrasting roles of futurists. Again, a word of caution is in order: The temptation must be resisted to perceive the divisions suggested as rigid and clear cut, when in fact they are fuzzy and indistinct.

1. The possible. In developing pictures of the possible, the primary function is invariably perceptual--that is, we are interested in effective ways of extending our perceptions of alternative paths that may be taken. Here, any of the "tools" of the writer, the artist, the architect, or the philosopher may be used--difficult as these often are to describe, let alone to understand.

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*Erich Jantsch, Technology Forecasting in Perspective, Paris: Organization for Economic Cooperation and Development, 1967.

Ways of "imaging" are perhaps as obscure as any methods the futurist encounters. However, since images of the future represent the "wellspring" nourishing the processes that follow, it is extremely important for futurists to know how to tap into such sources.

The earliest attempts by futurists to develop more formal tools focused heavily on those methods for improving our "imaging" capability. Delphi--and the whole family of techniques that have been derived from it--is aimed precisely at improved ways of eliciting judgmental and intuitive perceptions of particular individuals. Even here, many unanswered questions remain about suitable criteria for selecting and "calibrating" such individuals, appropriate ways of eliciting information, and the best processes for distilling and aggregating information. Usually, the best perceptions of the "possible" are not elicited or processed by formal means but, rather, generated by intuitive and personal processes that defy analysis and formalization.

2. The probable. The principal objective here is to examine the structure of possible paths--looking for connectedness and relationships that will help us develop understandings of the situation as a whole. A picture of the situation as a whole is essential if we are to make estimates of the likelihood of occurrences (or probabilities) of particular paths vis-à-vis other paths.

The most useful tools are those that permit us to specify "what is connected to what," the nature of these connections, and the ways the connected whole behaves: block diagrams, tree structures, matrices, flow diagrams, and scenarios or "models" of the domain of interest. The relationships need not be quantitative; they can be simple connectivity lines without values, or scenarios without probabilities assigned. In the limit, however, relationships can be described more formally and quantitatively through relevance trees, cross-impact matrices, KSIM simulations, and even, occasionally, probabilistic or system dynamics models.

3. The preferable. The least well-developed set of futurist tools deals with ways to examine and educate our preferences for particular alternative paths. Among the most important are a class of participative methods--ways of involving, educating, and experimenting with alternatives to understand them more fully before choices are made or alternatives implemented.

Included among the principal methods are: gaming--human players working with a representation of a system in which choices are made in response to outcomes; role playing (or reverse role playing) by a group of individuals representing stakeholders sharing perceptions of responses to particular outcomes; and joint problem solving--bargaining, negotiation, conflict resolution, and mediation techniques for addressing (and hopefully resolving) differences of perceived utilities of desired outcomes.

Table 2 is a summary of basic approaches keyed to the dominant roles of futurists.

Table 2

Basic Methodological Approaches

Approaches	Possible	Probable	Preferable
Perceptual	selecting		
	eliciting		
	distilling		
Structural		connecting	
		relating	
		modeling	
Participative			gaming
			role playing
			conflict resolving

Practitioners

Distinctions in basic premises of the futures field, roles of futurists, and tools used are also reflected in the corresponding characteristics of futurists.*

1. The possible. The most successful practitioners of the "possible" are individuals who may be characterized as visionaries, geniuses, or even mavericks. Whatever the descriptor used, such individuals possess a keen ability to view the world in unconventional and innovative ways that stimulate, educate, and stretch the mind.

   The backgrounds of such individuals are usually quite diverse. A dominant characteristic is that they tend to be intuitive ("right brain") and "feeling" in their thought processes and somewhat more likely to have been formally trained, if at all, in the social rather than the physical sciences. Exceptions, of course, exist: where the focus is on technological possibilities, a background in the physical sciences is more likely to be found. Almost universally, however, such individuals are effective writers able to communicate with a wide variety of audiences, particularly mass audiences.

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*Roy Amara, "The Futures Field: Functions, Forms, and Critical Issues," Futures, vol. 6, no. 4, 1978, pp. 289-301.

2. The probable. In contrast to individuals, practitioners focusing on the "probable" tend to cluster in research teams that attempt to harness the capabilities of multidisciplinary groups. Since the primary objectives are to analyze, evaluate, and systematize, a somewhat more analytical orientation is required. Accordingly, individuals lean toward "thinking" instead of "feeling" behavior. And the dominant background is understandably more likely to be mathematics or physical sciences, although operations research, systems analysis, statistics, or engineering are often as prominantly represented.

   It is here that we are most likely to find professional futures researchers, analysts, or methodologists plying their craft. Their focus may be on developing improved ways to process judgmental data, more powerful methods for constructing interactive models and simulations, or more explicit ways of generating scenarios. Generally, the work of these individuals is published in specialized journals catering to professional peers involved in similar methodological research.

3. The preferable. Perhaps the most explosive growth in recent years has occurred among the practitioners of the preferable (often so-called "one-issue" groups). These are frequently stakeholders focusing on issues of critical interest--environmental, consumer safety, employee health, nuclear power, women's rights, or more general futures. And a primary objective is to change perceptions or "to make something happen." Practitioners are more likely to be steeped in understandings derived from political science (or "the art of politics") and dominated by a pragmatic "sensing" rather than a "feeling" or "thinking" orientation.

   Leadership of such groups normally focuses around charismatic individuals able to rally support for a cause, less dynamic individuals in the guise of social reformers, or even powerful writers able to sway public perceptions to a particular point of view.

Table 3 is a summary of the characteristics outlined. Again, it should be noted that the characteristics have been overdrawn to create a framework. It is possible here, as elsewhere, for particular individuals to espouse views that encompass both the possible and the preferable at the same time. Also, it is almost inevitable that every analysis of the probable will contain some elements of the preferable reflecting subtly and unknowingly the biases of the analyst.

Table 3

Characteristics of Futurists

	Possible	Probable	Preferable
Practitioners	individuals	research teams	stakeholders
Dominant Background	social	math/physical	political
Orientation	"feeling"	"thinking"	"sensing"
Examples	visionaries geniuses writers	analysts methodologists futures researchers	charismatic leaders social reformers writers

Organizations

As with futurists, few organizations limit their activities to a single set of objectives. Nevertheless, particular forms have evolved that portray dominant components corresponding to the roles and characteristics of futurists associated with them.

1. The possible. The working style of visionaries and writers--whether or not engaged in exploring possible futures--can normally be described as solitary. The richest and most provocative images are not usually products of group processes or processes that lend themselves easily to institutionalization. As a matter of fact, it is the uniqueness of the imaginative leap that springs from efforts of particularly perceptive individuals that is most sought. This state of affairs also reflects the very poor understanding of the intellectual processes involved in the generation of the most powerful and compelling images.

   It is therefore not surprising to note that most futurists falling into this broad category operate essentially outside formal organizational structures. They tend to be academics involved in their own individualized research,

writers operating in typical freelance style, mavericks or geniuses able to command attention by the sheer power of their ideas. Lack of organizational structure gives such individuals the necessary freedom to perceive, work, and write, with little constraint. In those instances in which formal organizations are formed around such individuals, the accompanying structure is shaped to accommodate and support the central figure rather than to serve a more general institutional purpose. At such times, it is difficult to distinguish the purposes and aims of the dominant individual from those of the organization. And often an activity whose dominant purpose may have begun as an exploration of the possible may evolve into an exposition of the preferable.

2. The probable. Analytic activity can as often be a solitary pursuit as a team or group process. Futurists dealing with the probable, however, almost always need the resources that only a team can bring to bear. In part, this is because the substantive areas span such a wide range and in part because the principal tools instrinsically rely on small group processes.

   Almost without exception, futures researchers--primary representatives of this class of futurists--practice their craft in organizations that are usually described as think tanks. The mode of operation of such organizations is very similar: multidisciplinary groups in profit or nonprofit settings working on problem-oriented tasks. Although such groups often are engaged in generating possible futures, they're more ordinarily engaged in synthesizing, analyzing, and evaluating images--with an eye toward how choices in the present may be influenced or what information should be monitored.

   It is inevitable that the analysis of the probable has built into it some dimension of the preferable. The two components are often difficult to separate. In fact, one of the most difficult issues facing our high-technology society today is to find more effective ways of making the expertise of analysts (or technologists) available to society with as little hidden preference bias as possible.

3. The preferable. Characteristics for futurists focusing on the preferable are often very similar to those focusing on the possible. And, as indicated, a fair amount of crossing over and confusion often results. Thus, it is not uncommon to find futurists espousing particular choices or a set of choices, ostensibly without a surrounding organizational structure. Also, such individuals often can exercise quite a bit of influence, even though working alone,

if they are effective in attracting independent groups to espouse the positions that are being advocated.

Increasingly, however, since the objective of futurists falling in this category is to win support and influence choices, some kind of organizational structure is mandatory to raise funds, to lobby, and to disseminate points of view. In many instances, a set of interest or advocacy groups will come into being, either specifically organized by the futurist or organized on behalf of the individual by others. In either instance, the individual is a primary spokesperson and the driving force for achieving the goals that have been defined. Examples can be drawn from issues relating to the environment, energy, resources, economic growth, population growth, conservation, and combinations of these. They may be characterized as one-issue advocacy-, special-, or public-interest groups. Here we get very close to political processes or the locus where social choices are being framed or made.

Table 4 summarizes the characteristics of organizations keyed to the differing roles of futurists.

Table 4

Characteristics of Organizations

	Possible	Probable	Preferable
Type of Organization	usually no organization or one-person dominated	the classical think tank	multiple interest or advocacy groups

The following summary map (Table 5) of the futures field draws together the principal dimensions developed in the previous sections.

Table 5

Summary Map of the Futures Field

	Possible	Probable	Preferable
Objectives	Open up Alert Stimulate	Analyze Evaluate Systematize	Educate preferences Win support Guide choices
Roles	Image-driven	Analytically-driven	Value-driven
Tools	Perceptual	Structural	Participative
Practitioners	Visionaries Geniuses Writers	Analysts Methodologists Futures researchers	Charismatic leaders Social Reformers Writers
Organizations	None or one-person dominated	Think tank	Advocacy group

PART II. MAJOR CRITICISMS AND PROPOSED CRITERIA

Major Criticisms

A framework that defines the futures field, the roles of futurists, and basic tools can simplify the search for appropriate criteria for judging the relevance and quality of outputs. A useful starting point is a review of the major criticisms of the futures field vis-à-vis the futures framework developed in Part I.

At the root of much of the criticism of the futures field is the observation that no useful criteria exist for distinguishing what is "good and useful" from what is "poor and misleading." More specifically, major criticisms of the futures field can be distilled and grouped into nine principal categories. It is instructive to review these as a prelude to proposing a set of criteria addressing many of the issues raised.*

1. No clear framework for the futures field exists. The statement is unqualifiedly true. What's more, few appropriate frameworks have been proposed. The activity appears to have no clearly defined rationale or boundaries. And, as noted earlier, the absence of such a framework may be desirable when an activity is in its formative stages. Defining structure and boundaries prematurely may in fact inhibit some of the exploration and innovation that often marks the emergence of a new field. But the futures field is now well into adolescence, and the absence of some guiding structure can impede and restrict development rather than assist it.

   For example, the lack of a clear framework prevents our recognizing explicitly the specific differing premises, objectives, and roles of futurists, and the lack of clarity here in turn contributes to our confusing one set of objectives with another. Under the circumstances, even if we could agree on a set of applicable criteria, we would be at a loss as to when and how to apply it. It is easy to see why the definition of a suitable framework--specific and explicit but as broad as we may want to make it--must be at the top of any list for helping to sustain progress in the field.

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*Harold Linstone and W. H. Clive Simmonds (editors), Futures Research: New Directions, Addison-Wesley: Reading, Massachusetts, 1977.

2. Prediction is not possible. Indeed it is not. It is incredible how much untold time and energy could be saved by a clear understanding of this statement. Hundreds, if not thousands, of articles and papers have been written critical of the futures field based on a misapprehension of this simple but vital premise--normally stated as a major criticism or shortcoming.

   This is not to say that some "futurists" are not at fault for perpetuating the impression that prediction is possible. It is very easy to be seduced, or to be subtly cast, into the role of a clairvoyant by one's audiences and publics. Often quite resolute efforts are required to disavow any imputed capability to predict--predict in the sense that the term is ordinarily used, that is, to provide point estimates of the value of a variable (defining a trend or an event) at particular times in the future. Evidence exists all around us: inflation will be 11.7 percent, unemployment will reach 9.3 percent, Ronald Reagan will be elected president, the hostages will not be released by November 1980, and so forth. Once such a statement is made or imputed to have been made, the almost certain failure for the prediction to materialize brings the inevitable barrage of rejoinders about the "futility of futurism" and the questionable utility of the entire field.

3. Futurists generally overpromise on the results they can deliver. Guilty again. It does not help to point out that in an age when all "experts" are suspect, the demystification of futurists is very high on the list.

   Futurists generally do overpromise. For reasons outlined earlier, overpromising is one of the major occupational hazards almost inherent in the activity. But, at the same time, the confusion on roles contributes markedly to overpromising. Inadvertently, a description of what is intended to be a "possible" future is misinterpreted as "the most likely" outcome when, in fact, no such analysis has been done to justify assignment of any such probability, even in qualitative terms. Another common disappointment is experienced by consumers of "probable" futures in the form of several, usually three, scenarios--each with equal probabilities attached. "But," complains the typical decision maker, "I want you to tell me how I should bet," forgetting that how one allocates resources is very critically dependent on the value and preference framework of the decision maker, not the futurist. Or, finally, a "preferred" future may be misinterpreted--inadvertently or otherwise--as a "most probable" future. Here the advocacy role of the futurist

becomes confused with the analytical or expert role--a not uncommon shortcoming shared by other so-called technical experts. Unfortunately, such obfuscation serves to diminish greatly the general credibility of all outputs and the futures field as a whole.

Promises made or roles to be played must be directly related to the basic functions of futurists: to lay out paths to the future (the possible), to examine paths in detail (the probable), and to express preferences for particular paths (the preferable). Overpromising is a symptom of underspecifying--related again to the absence of an explicit foundation of basic premises or axioms governing the activities of the field.

4. The tools of the futurist are either nonexistent or inadequate. Much of this criticism is directed at the futures researchers whose activities are often most akin to those of other analysts: quantifying, analyzing, modeling. And a good deal of the criticism is as justified here as elsewhere.*

The tools are indeed primitive and inadequate--perhaps even, in some cases, nonexistent. For example, there is much we don't know about the criteria to use in selecting experts, about how to help distinguish what may happen from what is "preferred to have happen," about how to aggregate judgments of several individuals. We do know how to build elaborate models, but we don't understand well how to select the "best" model to represent a given situation, how to structure models jointly, or even how to validate models. Similarly, we know very little about explicit processes for generating scenarios. And our tools become even more obscure when we examine ways in which images of "possible" futures are generated or examine ways to coalesce or merge conflicting "preferred" images.

All futurists--and particularly futures researchers--have a great deal to be humble about. Yet it's become easy to forget the limitations of the tools used in the enthusiasm of trying to convince others that the activity is worthwhile. So, in the futures field, we have seen unreasonable and inaccurate claims made for Delphi, cross-impact, scenarios, systems dynamics, and trend impact analyses. On the list goes--each month seemingly bringing the innovation of another bright new tool for solving society's ills.

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*Ida R. Hoos, "Methodological Shortcomings in Futures Research," Handbook of Futures Research, Greenwood Press: Westport, Connecticut, 1978, pp. 53-66.

Analytical tools of all kinds will always have limits. These limits must be explicitly recognized and acknowledged so that a representation of a system is never mistaken for the system itself. It requires eternal vigilance and skepticism about limits to analysis on the part of both the producer and the consumer of futures information. It does not require, as some have suggested in their extremism, "throwing out the baby with the bathwater."

5. Theories of change are inadequate. They most certainly are. And change is the grist for the futurist's mill--either change as it has occurred for possible guidance in understanding the present or change as it may occur in the future. This is where the futurist "lives."

Almost every facet of change processes is obscure. We know very little about the role of images in personal or institutional change. We know desperately little about discontinuities--that is, how they occur, how they are related to continuous processes, how to anticipate them. And we know very little about barriers to change at micro (personal) and macro (societal) levels.

We think we know that there are a number of levels at which individual perceptions (about the future) may be modified. At an information theoretic level (left brain), individuals process new information as in an idealized decision-making environment--cognitively and rationally. In this idealized framework we think we know how to characterize the major elements of the process: new information is used to evaluate options in reference to a set of preferences or values leading to changes in representation of the problem or changes in an evaluation of the relative merits of the options. In contrast, at a social-psychological level (right brain), we recognize that perceptions can be influenced directly by a whole host of stimuli--emotions, feelings, new experiences; in this instance new information is only one, and often not a very important, factor. Here modified perceptions can lead to changes in attitudes and behavior through a set of complex processes that are not well understood. And these will in turn ultimately make themselves felt in the kinds of choices or decisions that are made.

In real life, of course, none of us functions in accordance with either model, but rather in some complex amalgam. Also, both of these models can be very misleading if one views them as simple linear processes without the complex array of feedback loops and interactions they embody. The essential message is that characterization of any change must include, if

it is to be useful and credible, some clues on the processes or stages of that change, tentative as these may be.

6. Validation criteria are nonexistent. Not quite true. Such criteria do exist, but they are seldom applied. Usually, quite incorrect criteria are proposed. Thus, one of the most common questions asked of practicing futurists is: "What is your record of hits and misses?" Or, "What fraction of time have you been 'on target' in your forecast?" The criteria are inappropriate because, as noted earlier, the purpose is not to predict but to generate images or perceptions and to analyze them so that we may increase the probability of producing futures more to our liking. But if validation akin to that of scientific prediction (or hypothesis testing) is not appropriate, then what kind is?

   Validation must be used in the sense of demonstrated evidence that the linkages between available information and forecasted outcomes are plausible. Plausibility is not synonymous with predictability. As a practical matter, one does not use a forecast in a static environment where new information is unavailable or ignored. Thus, the most useful indicator is not necessarily whether the forecast was on target (it could meet such external validity criteria by chance!), but whether the forecast meets proximate and internal validity criteria.

   Proximate validity of an output can be tested by monitoring intermediate events that can serve as milestones or reference points. If actions to be taken with regard to a ten-year forecast are evolutionary in nature, for example, then passing a proximate validity criterion after a year or two gives the forecast more credibility. If the forecast fails the proximate validity test, then it can and should be updated to accommodate new information.

   Internal validity of a forecast is a measure of how well it "hangs together"; the emphasis is on the integration aspect rather than the mere projection of separate elements. The need for achieving internal validity is not easily met because few useful methods and approaches exist for comprehensively integrating forecasts.

7. Outputs of the futures field are neither relevant nor credible. True, in many instances. Often, time frames are too distant, possibilities are too unrealistic, or preferred alternatives are totally impractical or half baked. Now we're getting close to the "bottom line" of desirable measures for the field.

In spite of the enormous growth in awareness and popularity of the futures field in recent years, the relevance of its output is marginal. Futurists are considered only one step removed from science fiction writers, "high-flying" intellectuals with a bent for speculation, or impractical dreamers too detached from the workaday world of earning a living, holding a job, and getting ahead. The futures field does include such stereotypes, as well as a great many others who don't fit these descriptions.

Indeed, much of the futurist's output--at least that which is given wide circulation--falls into the category of "the possible," "the preferred," or both. And it is true that much of this output is not necessarily well connected to the real world. As a matter of fact, the attention of the media (and the public) is often more likely to be attracted to the whimsical or sensational then to the useful and pragmatic. The notion that a futurist's outputs might be useful in making choices for realizing particular futures is a quite recent, and even revolutionary, idea. For the notion to penetrate more deeply into public consciousness, considerable nurturing is required by futurists in the form of fewer "images," more "steps on how to get there," fewer "I have the preferred alternative," and more "barriers that need to be overcome in order to implement." Also required is a "demand-pull" by consumers in the direction of insisting on relevant outputs on day-to-day issues that affect them.

8. Outputs of the futures field are not useful to decision makers. Very true. Even when the output is supposedly fashioned as an input to a specific decision process, often it is impossible to make the connection from the "outside world to the inside decision makers." At the present time, highest priorities are being placed on finding effective tools and approaches for tying general environmental information to specific choices.

The processes here depend on a two-pronged approach. One is the usual "outside to inside" strategy that alerts decision makers to emerging issues, trends, or events that may have relevance to their present or future operations. The other is the less common companion strategem of identifying "strategic hooks" from the "inside to the outside"--"hooks" for which it is fairly clear that changed conditions will result in clearly different choices.

All too often, when presented with the results of a futuristic effort, the following remark is made: "All very interesting--but what would I do

differently on Monday morning that I would not do without the information you have provided?" At this point the question has been posed too late. It should have been posed at the very beginning in the form of a statement: "A choice we're about to make is critically sensitive to assumptions we make on the values of a particular variable from 1981 to 1985 (e.g., number of household starts, price of oil). What is the range of values that we should use?" It may well be that the particular variables and questions cannot be specified directly. The job of the futurist then may be to construct linkages to those related and "proximate" variables for which forecasts can be reasonably made.

Questions do not have to be that specific or quantitative. Often changes in lifestyle, general philosophy of regulation, or "climate" for investment in a particular part of the world may be very important factors. The key here is that these should be identified clearly as inputs to the process rather than left to chance.

9. The outputs of the futures field are not effective in changing perceptions or guiding action. This is the "bottom line," and the verdict here reflects in summary form the individual shortcomings described to this point: futurists are not making a difference proportionate to the efforts being expended.

It is recognized that it is usually very difficult to relate particular inputs to particular changes in perceptions or actions. As noted earlier, appropriate theories of change do not exist; at the same time, we are not fully aware of exactly how such changes take place. Thus, heavy reliance must necessarily be placed on "feeling" or "judgment" about the utility of the futures output vis-à-vis other outputs.

Proposed Criteria

Even though it is not possible to devise a comprehensive set of criteria responding to all of the legitimate criticisms noted, we can make a start.* Such criteria should reflect not only criticisms of the field but, equally, the basic premises and roles of futurists as described in Part I.

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*Roy Amara and Gerald Salancik, "Forecasting: From Conjectural Art Toward Science," The Futurist, vol. VI, no. 3, June 1972, pp. 112-117.

Criteria will be developed at two levels: a general level intended to be applicable to the field as a whole, and a much more detailed level to reflect particular needs of outputs having more limited and specific objectives. Criteria will be presented in the form of questions to be posed by a prospective consumer, providing, in a sense, a consumer's guide to products produced by practitioners in the field.

1. Are basic premises about the futures field made explicit? In many, if not most, fields of inquiry, premises are not often explicitly examined. This is because they generally have evolved over a long period of time, normally are absorbed by its practitioners through "osmosis," and generally are reasonably understood by those in the field. Even so, it is the rule rather than the exception to find different schools of thought among social scientists, political scientists, and even physicists that are based on quite different world views.

   The absence of any generally agreed-upon framework in the futures field makes it essential that the basic premises be clearly identified. If the future is believed to be predictable or predetermined, if the influence of individual choice is believed to be negligible, or if the future is believed essentially to be a product of pure chance, then quite different processes will be used, and quite different outputs will be produced than those produced by people who subscribe to the premises described in Part I. Also, clear knowledge of such premises will short-circuit many other potential misunderstandings that otherwise will inevitably arise.

2. Are the specific purposes of the activity made explicit? This is where some kind of structure defining objectives and roles is invaluable. Is the purpose to provide us images of the possible? Or is it some amalgam of the possible and the preferable where no attempt has been made to distinguish between the two? Or is the output the result of a rather detailed analysis of a range of alternative futures or options done as objectively as possible? Or does the activity purport to cover each of these quite different aspects and distinguish clearly when shifting from one to the others?

3. Are the principal values espoused by the producers of the output made explicit? Inevitably, our individual and group values permeate everything we do whether or not we want such values to intervene. It is essentially a matter of degree and a matter of how explicitly we recognize, and to some

extent try to control, those interventions. So even an output that is genuinely intended to be objective will, by its very nature, incorporate value-laden components.

Thus, whatever the premises revealed and objectives identified, it is important to clear the air by describing as precisely as possible values relevant to the output produced. For example, if we're making a forecast on the likelihood of economic growth, it would be imperative to know whether we are low- or high-growth advocates. Or, if our focus is on the rapidly changing regulatory environment, the recipient of the forecast has a right to know whether we are proponents of aggressive regulation or proponents of an essentially free-market system. Or, if working on the future of health maintenance organizations, our attitudes and beliefs on the appropriate role of government in the delivery of health care should be made known.

Values are not ordinarily made that explicit. The reasons are many: we don't know how to do it well; we don't feel it's entirely appropriate to ask; and we don't know what to do with the information even when we have it.

4. Are processes (or methods) used to achieve results made explicit? The processes used in the futures field vary from the very explicit to the practically nonexistent. Futures researchers who normally deal with more formal approaches find it reasonably easy to be explicit. It is most difficult for those involved in generating speculative images or in espousing particular or alternative futures. Processes, if any, are often very complex and not as easily available for examination. Nevertheless, whatever the process used--whether systematic or not, whether logical or not, whether reproducible or not--it is often as important to describe it as clearly as the product itself.

5. Does the product include a description of change processes? Another way of stating this is: Is information included on the intermediate steps for getting us from here to there? Or, are jumps made without leaving a trail of antecedent developments? It may be entirely acceptable to do this in those instances when a sharp discontinuity is being described. And it can be presented as such. Otherwise, considerable value attaches to descriptions that fill in, so to speak, the specific steps or stages of development. This filling in can contribute greatly to the property of credibility, both at a conceptual and a practical level.

6. Is there enough time to act? Another way of posing this question is: Is the forecast already upon us? Are we dealing with the fairly obvious? Are we dealing basically with a nonforecast? Are we being provided a description of the present (that may be worthwhile in its own right), or are we in fact being provided a glimpse of a future which gives us time to think through alternatives for coping with it? It may be surprising to note how much of the futurists' outputs are really telling us something we were already aware of or that are dealing with events that have already overtaken us.

7. Is the product clear and specific? Most people are aware of accounts of the Oracle at Delphi couching predictions in such ambiguous language that one could never establish their ultimate accuracy. Even though our objective is not clairvoyance or prediction, no useful purpose whatever is served by ambiguous outputs. Also, clarity is essential for communicability--another basic requirement to be met by any output of the futures field.

8. Is the product credible? The components of credibility are difficult to define precisely: internal consistency, fitting together well, making sense, ringing true, appearing sound. Also, credibility requirements can be carried too far. Nevertheless, some measures of overall worth must be found that stop short of rejecting outputs because they do not conform to strict requirements of the conventional wisdom.

9. Is the product effective in changing perceptions or guiding action? If each of the preceding criteria is met, the chances that the product will have impact are considerably increased--measured in terms of changed perceptions and behavior, and perhaps even changed values. This is because values, perceptions, and behavior are all part of the same ball of wax, so to speak. Unfortunately, it's often very difficult to tell whether our values have changed, because we're so trapped by our present and past value systems.

The general criteria described above are intended to provide a checklist of questions and associated characteristics that are applicable to any output of the futures field--whether focusing on the possible, the probable, or the preferred. Even more useful would be a set of criteria that could be applied to particular kinds of outputs--namely, a set that corresponds to the dominant functions served or roles played by futurists.

1. The possible. The major criterion is plausibility. Images of the possible are, in most instances, speculations--well thought through speculations but, nevertheless, the products of reflection of some kind. Speculations need not meet any rigorous tests of comprehensiveness, completeness, or likelihood of occurrence. Also, if one is interested in images of the future primarily for their own sake, for entertainment, or for recreation--all perfectly acceptable pursuits--and not because they represent possible paths in which society might evolve by circumstance and by choice, then they do not fall within the purview of the futures field as defined, and the criterion of plausibility does not apply. Possible futures need not be preferred futures, nor need they be highly probable futures.

   The proposed plausibility requirement is closely related to the requirement for credibility. The principal components of plausibility include:

   - general conformance with basic physical (and, perhaps, behavioral) principles
   - internal consistency
   - reasonableness

   To be sure, the application of these components of plausibility requires the exercise of considerable judgment. Also, objections can be raised about the dangers and risks of downgrading or rejecting sets of images that are at variance with the conventional wisdom and yet are rich in the range of options they open up. After all, is it not true that many of the current technological and social innovations have, in their day, been considered fairly radical, impractical, or unworkable?

   Large questions do remain on how plausibility is to be interpreted if it is to act as a useful screen rather than an unwanted barrier. It really boils down to a question of how much time we want to devote to consideration of images that turn out not to be terribly relevant (and therefore not useful in a pragmatic sense) in order not to prematurely reject an image that may later turn out to be very relevant.

   Images are fairly easy to generate and disseminate--so easy that we are plagued with private and public image overload. The difficulty is that we don't know what to do with these images--how to sort them, how to evaluate them, how to coalesce them. If, in fact, such images do violate basic

physical or social principles, do not turn out to be internally consistent, or do not seem to make much sense, then the chances of their ultimately being realized are almost nil. Nevertheless, application of plausibility criteria will still remain a personal judgment matter--as it should.

2. The probable. The major criterion is reproducibility. Ideally, we would like to emulate the reproducibility of the sciences, where experimental results are reproducible or repeatable within a given measurement of error. In this instance, a particular set of inputs operating within a reasonably controlled environment will produce a reproducible set of outputs. But this ideal cannot be met with outputs of the futures field because results cannot be experimentally verified. Thus, if the notion of reproducibility is to have any operational significance in evaluating forecasts, it must be appropriately modifed to address the reproducibility of hypothetical statements about events rather than the reproducibility of the events themselves.

   For the experimental reproducibility of the sciences we shall substitute "informational reproducibility." This is defined as a measure of the extent to which a given state of information (input) leads to a given forecast (output). Reproducibility of informational output is much weaker than reproducibility of experimental outcomes. It is weaker because it concerns only the extent to which one integration of present knowledge about the future is consistent with other integrations.

   Reproducibility is strongest when different individuals using different methods or different models produce the same output. Reproducibility is weakest when the same group of individuals using the same process or the same models produce the same output. An extreme case of the latter may be a simple regression analysis; an example of the former may be provided by instances when two models built by different groups but dealing with the same output variables produce identical forecasts.

   In practice, reproducible forecasts are most often produced under circumstances in which probability distributions rather than point estimates are provided. In fact, the application of the reproducibility criterion forces attention on the uncertainty of a variable of a forecast. Reproducibility or agreement will often be possible only if the forecast explicitly acknowledges the existence of uncertainty. Thus, reproducibility is not to be confused with consensus, unless consensus is interpreted in the sense of consensus about our state of ignorance or uncertainty.

Reproducibility or repeatability is not often applied as a criterion for a number of reasons. It is difficult to test reproducibility across different groups; it is expensive; and, ordinarily, neither the producer nor the consumer of a forecast is interested in pursuing the matter. Another difficulty stems from the wide choice in how forecasts of different individuals within a group are aggregated--conservatively (that is, additively), thus deliberately leaning in the direction of our overstating uncertainty; or, somewhat less conservatively (that is, multiplicatively), based on assumptions of independence of inputs. Even so, the applications of reproducibility criteria can become powerful instruments for shaping the kind of output that futurists (particularly futures researchers) elect to produce.

3. The preferable. The major criteria are value explicitness and impact explicitness. Value explicitness has already been included in our set of general criteria. However, it occupies such a central role in the selection of preferred futures that it deserves special attention here as well.

Difficulties stem from the absence of any simple and straightforward ways of discerning relevant value systems. First, primary focus should be placed on those values that are most relevant to the substantive forecast. Then, such value orientations have to be disaggregated into specific parameters defining the alternative. These include: identification of goals and other desired outcomes; tradeoffs that have been made in opting for the preferred alternative; implicit discount rates that have been applied in trading off future benefits and risks for present benefits and risks; and so forth.

The other key criterion is impact explicitness. This refers to the impacts that are likely to be felt by the principal stakeholders. Who benefits and who loses? Are the likely benefits and losses equitably distributed in some sense? Have stakeholders been involved in the formulation of the alternative? What are the preferences of each stakeholder group? Have differences in perceptions been resolved?

Criteria related to the preferable deal at a very practical level with the basic ability to implement an alternative in terms of who gains and who loses. A preferred alternative future that can pass tests of value and impact explicitness is a far more useful candidate than one that is obscure in these respects or ignores these dimensions.

The general and specific criteria can be combined into six groupings and framed in the form of questions. Each set of questions may then be viewed as steps in an operational test for evaluating the utility of an output or product of the futures field.

Step 1

- Is the output an image, not necessarily supported by systematic analysis and not necessarily an image that is being promoted or held up to be avoided?
- Is the output a probable future or set of probable futures supported by detailed and explicit systematic analysis and as devoid as possible of the preferences of the authors?
- Is the output a plea for a particular future (directly, or indirectly by describing a future to be avoided) based on some underlying philosophy or perception of the world?
- Is the output some combination of the foregoing and, if so, is it clear when a transition is made from one to the other?

Step 2

- If the focus is on an image of the possible, then how plausible is the product with respect to:
  - being within bounds of known physical principles?
  - being internally consistent?
  - being "reasonable"?

Step 3

- If the focus is on the probable, then how reproducible is the output with respect to:
  - being repeatable under the same conditions?
  - being reproducible under different conditions?
  - being robust with changes in assumptions?

Step 4

- If the focus is on the preferred, then how explicitly portrayed are the values of the authors and the impacts on the stakeholders in terms of:

- preferences for particular goals?
- tradeoffs between present and future (discount rates)?
- gains and losses of particular stakeholders?

Step 5

- If the product or output is some combination of the possible, probable, and preferred, then can individual criteria of Steps 2, 3, and 4 be applied to the separate parts?

Step 6

- How does the product or output measure up on the following general criteria:
  - explicitness in premises? purposes? values? methods?
  - description of stages in change processes?
  - allowance of sufficient lead time for action?
  - clarity and lack of ambiguity of presentation?
  - credibility of results?
  - effectiveness in changing perceptions and guiding action?

PART III. POSSIBLE FUTURE DIRECTIONS

The purpose of this section is to examine the relationship of the futures field to other related activities, to identify specific needs for further progress, and to speculate on some directions in which the futures field might eventually evolve.

Relationship to Related Activities

Imaging, analyzing, and participating can be viewed in a variety of ways. Throughout this discussion we have chosen the following triad:

- the art of the possible
- the science of the probable
- the politics of the preferred

It is also useful to view the activities of the futures field in somewhat more operational terms, posed in the form of the following three questions:

- What possibilities and choices exist?
- What is our state of knowledge about the future?
- What do we prefer?

This triad of questions is addressed by several fields related to futures, though in different ways. These fields include systems engineering, operations research, and systems analysis as one cluster; decision analysis as another; and, finally, the policy sciences. It is instructive to compare the approaches of these related fields to that of the futures field. First, let's briefly review the origins and functions of each of these sister fields.

Systems engineering has roots extending to pre-World War II days, largely stimulated by problems confronted in the design of one of the most complex physical systems of that period--the telephone network. Accordingly, the dominant discipline was engineering, and the primary focus was the design of large, complex, technical systems; subsequent development was dominated by the World War II needs of large weapon and control systems. Design was--and is--done largely through the now well-known iterative cycle of requirements determination, alternatives analysis, and consequence evaluation.

Operations research* also has clear roots extending to the pre-World War II period, this time stemming from needs for integrating the operations of radar and fighter plane systems for early air defense of the British coast. Work is characterized by the analysis of operational problems involving persons and machines and focusing primarily on short-term (tactical) aspects. Because of the nature of problems tackled (and the background of early practitioners), the dominant disciplines here were mathematics and physics.

Systems analysis* developed in the 1950s and early 1960s as an outgrowth of the work on operations research as the purview of practitioners grew to encompass planning and strategy. In viewing tactical problems in larger and larger settings, one is unavoidably faced with more complex systems, more complex structures, and more complex operations. Although it is a bit more difficult to define the dominant discipline, the largest mark was left in the late 1960s by those with backgrounds in economics focusing on cost/benefit and cost/effectiveness analyses for defense systems and, later, on planning, programming, and budgeting analyses in more general settings.

The origins of decision analysis can be traced to the need in the late 1960s to apply and extend more powerful analytic techniques to management and business decision making. The primary focus or starting point is a decision--short term or long term--and the purpose is to bring to bear our best applied understanding of mathematical, statistical, and system concepts. The emphasis is on an integration of perceptions, subjective probabilities (judgment), utilities (value preferences), and risk analyses.

Also, at about the same time in the late 1960s, the activity of policy analysis emerged, focusing on similar issues (decision making) in the public sector. Here the dominant discipline was political science, and the emphasis on analysis of basic political/economic and political/social issues: regulation, public/private sector roles, federal/state roles, government decision making, income distribution (equity), privacy, and so forth.

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*Hugh J. Miser, "Operations Research and Systems Analysis," Science, vol. 209, July 4, 1980, pp. 139-146.

Table 6 is a summary representation of the origins and contrasts of these sister activities, in comparison to a similar characterization of the futures field.

Table 6

Possible Components of a Science of Complexity and Change

Field	Dominant Discipline	Description
Systems Engineering	Engineering	Design of large, complex physical systems (telephone, weapon systems) focusing on system structure (requirements/alternatives/evaluation cycles) and system control
Operations Research	Physics	Analysis of operational problems involving people and machines and focusing primarily on short-term (tactical) aspects
Systems Analysis	Economics	Analysis and synthesis of large systems using cost/benefit, cost/effectiveness, and planning/programming/budgetary methodologies and focusing on tactical and strategic consequences of choices
Decision Analysis	Management/ Business	Analysis of both short-term and long-term decision-making processes using probabilistic, time, and risk preference concepts
Policy Analysis	Political Science	Analysis of resource, financial/budgetary, and political factors with emphasis on policymaking processes in the public sector
Futures Field	Social Science	Analysis of long-term alternative futures with emphasis on judgmental, social, and participative elements

For the systems cluster, an iterative pattern of requirements/alternatives/evaluation shapes the basic approach. This three-stage process is similar to the three major components of the futures field. But the questions are asked differently: What specifications or requirements do we strive for? What alternative systems are likely to meet the stated requirements? Do such systems perform to our satisfaction vis-à-vis the stated requirements?

Similarly, in the field of decision analysis, one begins with the decisions (or choices) to be analyzed, characterizes the state of knowledge in terms of system structure and uncertainty, and then analyzes preferences in terms of the value, time, and risk preferences of the decision makers.

Finally, the lexicon of policy analysis seems different still, but only on the surface. The principal phases of policy formulation may also be viewed in three stages: goals/strategies, models/indicators, and attainments/values.*

The similarities, summarized in Table 7, are striking. In each case, we are dealing with some kind of complex system (physical, social, or political) to be structured (in systems engineering) or to be analyzed (in all other fields). We want to guide or control this system to achieve some ultimate objective, whether defined or not. The major differences among these fields stem from the system level at which we operate (product, corporation, nation-state, world), the time horizon we want to include (short, intermediate, long), and the starting point we want to assume (requirement, decision, goal, image).

But there are other differences, too. And, indeed, the unique contributions of the futures field to the planning process can be traced to these differences. In particular, it is in the fuller development of the image-forming and participative legs of the triad that the futures field departs from the mold of its sister fields. These differences deserve closer examination.

Table 7

Comparison of Four Analytical Frameworks

Stages of Planning/ Field of Planning	Choices	Knowledge	Preferences
Systems Engineering Operations Research Systems Analysis	Requirements	Alternatives/ Systems	Evaluation
Decision Analysis	Decisions	System Structure/ Uncertainty	Value/Time/ Risk Preferences
Policy Analysis	Goals/Strategies	Processes/ Indicators	Attainments/ Values
Futures Field	Images	Forecasts/ Premodels/ Scenarios	Group Participation/ Preferences
	Possible	Probable	Preferable

*Roy Amara, "Towards A Framework for National Goals and Policy Research," Policy Sciences, vol. 3, no. 1, March 1972, pp. 59-67.

The image-forming roots of the futures field are not difficult to trace, although they are not uniquely tied to studies of the future. Images of the future arise from our basic assumptions about human origin, nature, interaction, and place in the universe. Such images underlie the basic values and attitudes that govern our relationships with each other (social), with nature (ecological), and with ourselves (meaning of life). Furthermore, compelling images of humankind often draw individuals to a particular view of reality that may be appropriate to a certain stage of societal development. For instance, while images of human dominance over an apparently limitless planet helped to industrialize much of the world, a more holistic image of our relationship with nature is now suggested as perhaps the only means of global survival. Other images may emphasize individualism, isolation, unity, collectivism, and similar fundamental dimensions of selfhood.

Thus, the image-forming component of the futures field represents a potentially dramatic opening up of the range and richness of options that are injected into the planning process. Such images can come from any quarter--not simply that of the expert, the scientist, or the analyst, but also from the poet, the philosopher, and, yes, the proverbial man in the street. The images may, of course, be of many kinds. Some will encapsulate desirable goals or worlds to be achieved; others may be highly visionary; and still others may present broad outlines of crises and challenges to be met. Many images will not withstand the scrutiny or pass the tests of feasibility analysis, and perhaps most will be modified considerably during the process of implementation (should they get to that stage). Nevertheless, it is on the diversity and richness of images that the future development of society ultimately depends. And the futures field explicitly strives both to expand the access to such images and to understand more fully the processes by which they are developed and generated.

Although historically the participatory roots of the futures field may be traced to the founding fathers and to the early development of the country (e.g., writings of Alexis de Toqueville), the modern roots are not yet clearly etched. For example, it is still difficult to identify clear signs of futures-oriented participatory movements in the private sector, even though some signs are appearing (and probably intensifying) of the desire of employees to exercise increasing voice and control over the work environment--and ultimately other corporate policies. In the public sector, where the signals are much clearer, the varied citizen groups that have emerged since the early 1960s have often identified themselves with futures. These may be recognized by names

which usually include designations like "tomorrow," "2000," or "goals": California Tomorrow, Seattle 2000, Goals for Dallas, Hawaii 2000, Alternatives for Washington, Massachusetts Tomorrow, Goals for Georgia, Iowa 2000, and The Commission on Minnesota's Future. Virtually all of these groups are actively involved in state or local futures planning or in the generation of goals. Most of them do not yet have adequate resources--financial, methodological, personnel, or otherwise--to achieve the objectives they have set for themselves. And fewer still have very clear perceptions of how to orchestrate successfully the resources required to meet their stated objectives. Nevertheless, they represent a component of considerable vitality and importance to the futures field, for several reasons. First, they focus on such tangible planning issues as population distribution, public transportation, energy use, continuing education, and land use. Also, they seek broad involvement of citizens in thinking creatively about long-term alternative futures. But in so doing, they seek even more. They seek to counteract prevailing attitudes of powerlessness that increasingly pervade every strata of society. They seek to approach more closely than ever before the dream of popular government. And perhaps most importantly, they seek to return government to a human scale, with increasing emphasis on local self-determination as well as local responsibility and control. These changes need not be limited to governmental units. The civil rights movements, consumer protection groups, and environmental organizations have all sparked rethinking of the concept of public representation in a broader sense. The result may be a renewed examination of the meaning of representation, legitimacy, equity, and power in a democracy in the light of future needs and preferences.

The participative component thus represents an opening up of the planning process by increasing decentralization. Decentralization is made necessary by the inherently broad and pervasive scope of futures-planning activities. Potential effects of choices to be made are not sharply restricted; instead, they spill over in a cascade of secondary and higher-order impacts on large segments of society. Thus, we cannot restrict our attention to the preferences of a few decision makers or policy planners. Furthermore, the issues are generally too complex and the level of understanding too primitive to attempt the use of surrogate preferences derived or projected from social data. The real preferences of those whose lives are to be influenced must somehow be included in the planning process.

Specific Needs

The futures field is clearly still in an embryonic stage of development, and it is very difficult to perceive the forms it may take at maturity. Still more difficult to see is the likely evolution of the entire body of related fields that attempts to increase intentionality in human affairs--processes that might eventually develop into an art and science of complexity and change. Nevertheless, it is possible to outline--even if only dimly--particular needs that should be addressed to advance the futures field further.

The major need related to the imaging role (possibilities or choices) of the futures field is the characterization and understanding of social change processes at the macro (societal) level. Any image of the future inherently deals with change--either change as it has occurred in the past for possible guidance in the present or, more importantly, change as it may occur in the future. The dynamics of change processes are now very poorly understood, in almost any social context. The ultimate objective is thus to assist in the development of a science of change by:

- development of a language and framework for characterizing social change processes, including their determinative, formative, and random aspects, as well as such basic elements as values, goals, and indexes of social performance
- study of the role of societal images in social change processes and the ways such images should be incorporated into futures activities
- exploration of the dynamics of social change from the standpoint of the occurrence of continuities and discontinuities, the nature of critical time constants, and positive and negative feedback effects
- analysis of a role of institutions in processes of social change vis-à-vis lead/lag relationships, adaptation capabilities, and renewal mechanisms
- study of the relationship of change processes at the macro (societal) level to change processes at the micro (individual or group) level

The major need related to the analytical role (state of knowledge) of the futures field is the development of a "unified field theory." What is clearly not needed is another fashionable name for a minor variant to an already known principle or technique. Instead, a serious start should be made in structuring the beginning of a science of complexity

that aims to integrate the quantitative and qualitative, the analytical and judgmental, and the short-term and long-term approaches to systems planning and analysis. This need corresponds, in part, to the stated, but largely unrealized, objectives of General Systems Theory. A prime objective, then, is to understand and put the methodologies used in the futures field in such a context by:

- retrospective studies of the utility of futures methods and the factors that have led to their success or failure
- development of methods for making value orientations of futures researchers as explicit as possible so that the possible influence on research results may be assessed more easily
- exploration of the role of multidisciplinary inputs of several experts to produce joint forecasts, models, and scenarios or alternative futures; particular attention should be directed to group judgments as vehicles for communicating and integrating information across organizational boundaries
- study of the principal data-integrating or cross-relating techniques (such as matrix impact methods, scenario-building, and gaming/simulation) to detect underlying similarities and differences
- development of an array of quantitative and qualitative validating measures that can be applied to results of futures efforts

The major need related to the participatory role (the preferred) of the futures field is in characterizing and understanding change processes at the micro (or individual) level. This, after all, is the level at which most change processes begin--where individual perceptions and attitudes are formed. Also, in view of the strong participatory roots of the futures field, considerable attention should be paid to the nature of the processes by which such participation can be fostered. Research should include:

- retrospective studies of the role of futures outputs in the realization of perceptual shifts on an individual or group basis
- exploration of the factors influencing credibility of futures outputs as a function of personal and local cultural characteristics
- analysis of behavioral and attitudinal change processes triggered by alternative images of the future
- study of barriers to microchange processes

- evaluation of the relative effectiveness and role of individualized "hand-crafting" microchange processes versus group "culture-modification" microchange processes.

Toward an Art and Science of Complexity and Change

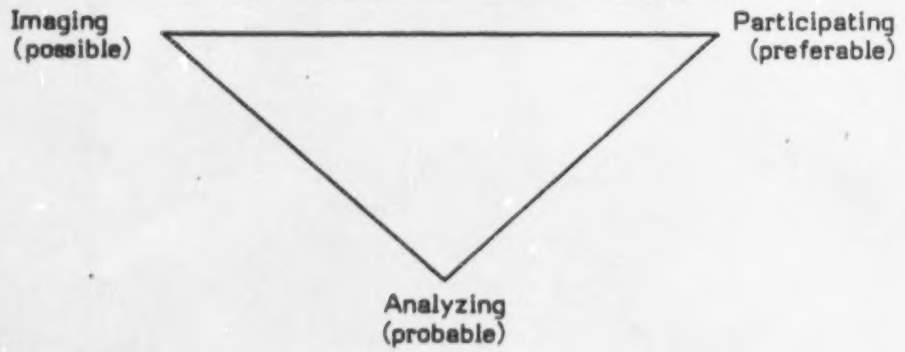
It is a virtual certainty that the futures field will eventually be subsumed in some larger context. And, very likely, in accordance with society's proclivity to function on the basis of selective attention and inattention, a new social planning focus will gradually develop. But the futures field will leave, as have other similar activities in the past, its distinctive marks. These are likely to be:

- a deeper understanding of social change processes at macro and micro levels
- a more effective integration of qualitative (or judgmental) and quantitative (or analytical) components in planning
- a more balanced multidisciplinary approach to planning, with the social sciences as full partners with the physical and analytical sciences

The futures field may actually contain the seeds of its own transformation (or even demise) by demystifying social planning. Perhaps not unexpectedly, information technology--the centerpiece of the postindustrial society--may play a pivotal role in this transformation. The complexity of the problems we face has led us to specialization in planning as it has elsewhere in society. As a result, the basic activities of thinking (or imaging) and doing (or participating) have been pulled farther apart by the analytical arm of the futures field (see Figure 1).

Figure 1

Representation of Functions of the Futures Field



The two basic players are image generators and implementors. But these are also the most difficult to join because of the lack of a common language and the different philosophical orientations.

Intermediation of some kind will still be required to sort out and evaluate options and consequences, even in the long run. But the form of that intermediation will probably change. In the first stage of change, the image generators may be provided with vehicles for easier access and interaction with each other, as well as with a new class of intermediaries. In a second stage, participatory planning and decision making (involving implementors) at grass-roots levels may increasingly become a reality, with the important feature that effective linkages can now also be established with goal formulators. Thus, the triangle of Figure 1 may now become a line; the shortened response times would permit rapid iteration, interleaving of thinking and doing, and the amalgamation of incrementalism and rationalization in planning.

Perhaps these are no more than fanciful images. But perhaps they suggest real possibilities for coping with increasing complexity by working through that complexity to provide information-monitoring, -gathering, -analyzing, and -disseminating capabilities for social planning and action.